REMARKS

Claims 1-4 and 6-19 are pending in the application. Claims 1, 7-9, and 13 have been amended, and claim 5 has been cancelled. No new matter has been introduced by the amendments.

Claim Rejection Under 35 U.S.C. §112, First Paragraph

Claims 1-19 have been rejected for an alleged failure of the specification to support the recitation of "heating the cylindrical holder material and the optical-element material to their own softening temperature." This rejection is overcome in view of the following remarks.

In particular, the Office Action asserts that the specification enables a holder material made of aluminum or stainless steel, and acknowledges that this is a preferred embodiment, yet alleges that pure metals and metal alloys do not exhibit a softening temperature reflected by a change in viscosity. (Office Action, pg. 2). The Office Action further asserts that the softening temperature and associated change in viscosity are characteristic of glassy materials and, apparently, concludes that the claimed cylindrical holder material must be a glassy material. Accordingly, the applicant understands the enablement rejection to be grounded in the assumptions that, first, the specification enables only aluminum and stainless steel as holder materials and, second, that the cylindrical holder material must be a glassy material.

The applicant asserts that the specification fully supports a broad range of materials beyond the preferred embodiments of aluminum or stainless steel. It is clear in the applicant's specification that aluminum and stainless steel are examples of materials and not the only materials that can be used to form the claimed cylindrical holder. The specification describes the lens material 20a as an optical material that can be lead oxide glass (SFS01). This lens material is fixed to and integrated with the lens holder 10 by press-molding. (Specification, pg. 5, paras. 0026 – 0027). The lens material 20a exhibits viscosity characteristics such that the lens material will flow under heat and pressure into the void part 14 of the lens holder 10. (Specification, pg. 6, paras. 0029 – 0030). The specification instructs those skilled in the art that the flow resistance of the void part in the lens holder must change depending upon the viscosity of the lens material 20a or on the level of molding pressure. Accordingly, the flow

resistance of the void part 14 during press molding of the lens material at its glass transition temperature must be reduced. Further, when the lens material 28 is press-molded in the vicinity of the glass softening temperature, the flow resistance of the void part must be increased to accommodate the high fluidity of the lens material. (Specification, pgs. 6-7, para. 0031).

Further aspects of the press molding process are described in subsequent paragraphs of the applicant's specification. In paragraph 0039, the applicant discloses that the lens holder material has a softening temperature that is optimum for the lens material 10a. Accordingly, the applicant asserts that those skilled in the art will readily understand that the material of the lens holder must satisfy the requirements of the press molding process that arise from the physical characteristics of the lens material 20a. The applicant asserts that those skilled in the art will readily be able to determine a proper material without undue experimentation.

The applicant further asserts that the contentions that pure metals do not have a softening temperature and that the lens holder must be a glassy material are incorrect. In particular, the applicant notes that it is well known that aluminum and other metals exhibit a softening temperature under application of heat and compressive force. The applicant respectfully directs the Examiner's attention to "Large-Strain Softening of Aluminum in Shear at Elevated Temperature," Kassner, et al., Metallurgical and Materials Transactions A, Vol. 33A, October 2002, pg. 3145 (copy enclosed). The applicant further points to the enclosed reference, "The Softening Temperature of Copper and Bronze Transmission Lines," Berent, et al., Metal Science and Heat Treatment, Vol. 11, No. 2, February, 1969. These references clearly describe softening characteristics of metals.

Moreover, the applicant asserts that he claims a process step of heating the cylindrical holder material and the optical-element material to their softening temperature, and that there is no recitation of glassy material behavior in his claimed method. Accordingly, the rejection has been traversed and should be withdrawn.

Rejection Under 35 U.S.C. §112, Second Paragraph

Claim 7 has been rejected for failure to provide antecedent basis for the term "micro-pores." This rejection is overcome in view of the amendment of claim 7 by striking the article "the." The claim has further been amended to correct the recitation of "pores" to "micro-pores."

Similarly, claim 13 has been amended to change the article for the term "flow resistance" from "the" to "a."

Claim 8 has been amended to change its dependency from claim 5 to claim 1 in view of the cancellation of claim 5.

Claim 9 has been rejected for recitation of a "hemispherical section of the optical element material." Claim 9 depends from claim 6, which in turn depends from claim 1. This rejection is overcome in view of the following remarks.

The applicant asserts that the recited "hemispherical section" is clear and unambiguous in view of the description of the projected portion in the applicant's specification together with the illustration of the hemispherical section of the optical-element material in FIGS. 1, 3B, 4, 5B, 6, and 7B. The applicant describes the optical material in terms of a spherical lens that is designated as element 20 in FIGS. 1 and 3B, as element 40 in FIGS. 4 and 5B, and as element 60 in FIGS. 6 and 7B. The lens is positioned in a holder.

In claim 1, the press-molding to form a cylindrical holder and an optical element includes allowing a projected portion of the optical element to extend outwardly from an outer edge. The optical element is positioned inside the cylindrical holder material. Further, the projected portion is formed by pressure created during press-molding, such that the projected portioning extends outwardly from an outer edge of the optical element.

The applicant asserts the recitation that the projected portion comprises a hemispherical section, is consistent with the physical environment recited in the claimed method. Accordingly, the applicant asserts that those skilled in the art would have no difficulty understanding the metes and bounds of claim 9.

Claim 13 has been rejected for failure to provide proper antecedent basis for "flow resistance of the holder material." This rejection is overcome by changing the article "the" to "a."

Rejection Under 35 U.S.C. §102(b)

Claims 1-2, 4-5, 8, 12-16, and 18-19 have been rejected over Bartman, et al. This rejection is overcome in view of the amendment of claim 1 together with the following remarks.

Claim 1, as amended, recites a method that includes positioning an optical-element material inside a cylindrical holder material. Claim 1 further recites press-molding the cylindrical holder material and the optical-element material and includes allowing a projected portion of the optical element to extend outwardly from an outer edge. Claim 1 further recites that the cylindrical holder material comprise a cavity in the inner circumferential surface for retaining the projected portion of the optical element. The cavity is described by the applicant, for example, in paragraphs 0027 to 0031 of his specification. Further, the cavity is illustrated as, for example, element 14a in FIGS. 1, 3A and 3B.

In contrast to the structural characteristics of the apparatus within the claimed method, Bartman, et al. fail suggest to or disclose any type of cylindrical holder having a cavity for retaining a projected portion of an optical element.

Claims 2, 4, 8, 12-16 and 18-19 depend directly or indirectly from claim 1. These claims are allowable in view of the amendment and foregoing remarks pertaining to claim 1.

The rejection of claim 5 is moot in view of the cancellation of claim 5.

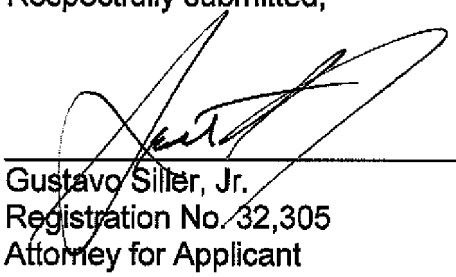
Rejection Under 35 U.S.C. §103(a)

Claim 3 has been rejected over Bartman, et al. and further in view of Angenent, et al. This rejection is overcome in view of the amendment and foregoing remarks pertaining to claim 1. Further, the applicant asserts that the addition of Angenent, et al. does not overcome the deficiencies of Bartman. Angenent, et al. do not suggest or disclose a cylindrical holder having a cavity for retaining a projected portion of an optical element.

Claims 6, 7, and 9-11 have been rejected over Bartman, et al. in view of Neid, et al. This rejection is overcome in view of the amendment and remarks pertaining to claim 1, from which claims 6-7 and 9-11 directly or indirectly depend. Further, the addition of Neid, et al. does not overcome the deficiencies of Bartman, et al. This is because neither reference suggests or discloses a method in which a cylindrical holder comprise a cavity in an inner circumferential surface for retaining a projected portion of the optical element.

The applicant has provided a novel and non-obvious contribution to the art of methods for making optical elements. The claims at issue distinguish over the cited references and are in condition for allowance. Accordingly, such allowance is now earnestly requested.

Respectfully submitted,



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